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BUPRESTIDAE FROM WESTERN UNITED STATES.—VAN DYKE.

1, 2, *Acmaeodera sinuata.*
3, *A. sinuata sex-notata.*
4, *A. wenzeli.*
5, *A. wheeleri.*
6, *A. cubaecola.*
7, *A. marginenotata.*
8, *A. pubiventris.*
9, *A. pubriventris* VAR *lanata.*

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XXX. JUNE, 1919. NO. 6.

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New Species of Buprestidae (Col.) from the Western United States, with Supplementary notes concerning others.

By EDWIN C. VAN DYKE, University of California, Berkeley, California.

(Plate VII.)

This paper embodying the descriptions of certain new species and notes pertaining to others, will constitute the third short paper dealing with the *Buprestidae* which I have written. It is presented like the previous ones[1, 2] with the idea of increasing our knowledge of this interesting family.

[1] "New Species of Buprestidae (Col.) from the Pacific States," by Edwin C. Van Dyke, Entomological News, Vol. xxvii (1916), pp. 405-412.

[2] "New Species of Buprestidae (Col.) from the Pacific States," by Edwin C. Van Dyke, Entomological News, Vol. xxix (1918), pp. 53-58.

Acmaeodera sinuata n. sp. (Pl. VII, fig. 1).

Form moderately depressed, bronzed, clothed with rather long erect hair which is black on the disc of elytra, apex of pronotum, and base of head, white on anterior part of head, basal part of pronotum, and sides of elytra, thorax without yellow side markings, each elytron with a broad yellow lateral band, somewhat roseate on inner margin, commencing at the humeri, at first as a narrow marginal band, then suddenly broadening and continuing as such with a sinuate inner border to near the apex.

Head rather densely, coarsely punctured and sulcate, clypeus broadly and moderately deeply emarginate; thorax twice as wide as long, apex slightly bisinuate, base truncate, sides slightly arcuate, broadest one-third distance in front of base, and narrowed at apex, margin narrow, only partly visible from above, surface somewhat densely and coarsely punctured, a slight median basal impression and oblique lateral.

Elytra as wide at base as the thorax, sides subparallel from base to beyond the middle, thence gradually narrowed to apex, margin serrate posteriorly, disc convex, punctato-striate, punctures moderately coarse, intervals with single row of punctures somewhat less than half as prominent as those of striae.

Body beneath bronzed, coarsely and closely punctured over thorax, rather finely and sparsely on abdomen, moderately clothed with rather long white hair, the anterior prosternal margin sinuate, the last ventral bluntly rounded and without carina.

Length 9 mm., breadth 3.25 mm.

This very distinct species belongs in the emarginate group as defined by both Horn[3] and Fall,[4] though some specimens show a tendency toward having a trisinuate prosternal margin. The facies of the species is also somewhat like that of *A. jocosa* Fall in the sinuate group and the markings suggestive of those given in the description of *A. horni* Fall. It however belongs near *A. prorsa* Fall, but differs from that as well as from *A. horni* Fall by lacking the broadly dilated prothorax and cuneate form. Its markings will enable it to be readily separated from all of our other species. The markings are not constant, though, for the yellow band may have its inner margin almost straight, as shown in Fig. 2, or be broken, form-

[3] "Revision of the Species of Acmaeodera of the United States," by George H. Horn, M.D., Trans. Am. Ent. Soc., Vol. vii (1878), pp. 2-27.

[4] "Synopsis of Species of Acmaeodera of America, North of Mexico," by H. C. Fall, Journ. New York Ent. Soc., Vol. vi (1899), pp. 1-37.

ing spots as in the variety described below. Intergrades however exist which link them all together.

The species so far as I know is confined to California, though widely distributed there as well as uncommon. I have seen one specimen from the Sierra Madre Mountains of Los Angeles County, collected July 6, 1912, by J. C. Bridwell and now in the collection of the Division of Entomology, University of California; five from near Placerville, including specimens collected by H. E. Burke, F. H. Herbert, and the type, one from Hullville, Lake County, collected by L. R. Reynolds, and three from Los Gatos, collected by F. H. Herbert. The material secured by Mr. Burke and Mr. Herbert was taken on *Ceanothus cuneatus* Nutt.

Type in my own collection, collected above Placerville along the Placerville road, El Dorado County, June 9, 1906, by F. W. Nunenmacher and by him kindly presented to me.

Acmaeodera sinuata sex-notata n. subsp. (Pl. VII, fig. 3).

Like typical form except proportionately broader and with the lateral yellow band broken up into large spots. These are situated, one just posterior to the humeri, a second at about the middle of the sides, and a third between that and apex with a trace of a fourth slightly posterior to the last. The three large spots are all somewhat transverse, extending from the margin of the elytra inwards to almost the second stria in the case of the first, almost to the third stria in the second, and to the third in the third. Length 9.5 mm., breadth 4 mm.

This variety superficially resembles in size, shape and markings typical forms of *A. robusta* Horn. It can however readily be distinguished from that by lacking the yellow spots of the thorax as well as by its more bronzed elytra and less sinuate anterior margin to prosternum. While all the specimens in the lot from which the type was taken are broad, others have been seen which were of the exact shape of typical *sinuata*. These were also taken in company with the latter. I have seen four specimens of the broad form in the collection of Dr. F. E. Blaisdell and know that Mr. L. R. Reynolds also possesses some six or eight taken at the same time and place as the type and from *Ceanothus cuneatus* Nutt., and two specimens of the narrower phase in the collection of Mr. H. E. Burke, both

bred from *Ceanothus cuneatus* Nutt. that was secured from Placerville.

Type in my own collection, collected at Hullville, Lake County, Cal., June 14-17, 1917, by Dr. F. E. Blaisdell, to whose generosity I am indebted for the same. Paratypes are in Dr. Blaisdell's collection.

Acmaeodera wenzeli n. sp. (Pl. VII, fig. 4).

Form elongate, subparallel, slightly depressed, bronzed, elytra with a bluish tinge, sparsely covered above with moderately long, erect, black hair, changing to white laterally, prothorax unicolorous, each elytron with three distinct yellow maculations placed as follows: One triangular blotch placed halfway between base and apex and extending slightly forward along margin and inwardly four intervals from the margin, a second fascia between this and apex and extending from the third stria obliquely outward almost to margin, the third a small spot placed subapically and on the third and fourth intervals (in my specimen there is also a fourth spot on right elytron between the second and third maculation).

Head moderately coarsely and sparsely punctate, no frontal carina, clypeus deeply semicircularly emarginate, antennae with fifth joint suddenly dilated; thorax less than twice as wide as long, apex and base subtruncate, sides rounded in front, parallel and straight for posterior two thirds, margin fine, not visible from above, disc with a slight median basal impression and a deeper one each side midway between this and the posterior angles, the latter the terminations of shallow oblique lateral impressions, the disc rather finely and sparsely punctate and the sides coarsely and cribrately punctured.

Elytra as wide at base as the thorax, umbones feebly prominent, sides slightly sinuate to posterior two-thirds where elytra are widest, thence gradually convergent and rounded to apex, margin slightly serrate posteriorly, disc somewhat convex, striae finely impressed anteriorly, quite deeply posteriorly, and with rather coarse punctures basally and fine apically, intervals flat and with a single series of fine punctures.

Body beneath coarsely, densely punctured anteriorly, finely, sparsely over abdomen, clothed with long white hair, the anterior margin of prosternum subtruncate, the last ventral with distinct subapical carina.

Length 9.25 mm., breadth 3.25 mm.

This species belongs with the species having a truncate prosternal margin and is close to *A. consors* Horn, from which it differs by having a different type of maculation as well as a diverse shape, particularly in respect to the prothorax, and

another style of punctuation. The unicolored thorax as well as the deeply emarginate clypeus will always enable this to be separated from the darker and narrower phases of *A. pulchellus* Herbst and its allies.

Type in my collection, collected in the Chisos Mountains, Texas, July 19, by Mr. H. A. Wenzel and kindly presented to me by his father, Mr. H. W. Wenzel, after whom I take pleasure in naming it. Two other specimens are now in the collection of Mr. Wenzel.

Acmaeodera wheeleri n. sp. (Pl. VII, fig. 5).

Form elongate, subparallel and subcylindrical, head and prothorax markedly bronzed, the latter with a small obscure yellow spot near posterior angles, the elytra a deep blue, each elytron with two rows of large yellow spots, the discal with four, one subbasal, one subapical and two between equally distant from each other and the nearest of these, the marginal with three spots which practically alternate with the discal, the head and thorax clothed with short white semi-erect squamulose hairs, the elytra with rows of short white semi-erect setae, the latter arising from the punctures of the elytral intervals.

Head coarsely, shallowly, cribrately punctured, the clypeus rather deeply emarginate, antennae with fifth joint suddenly dilated; thorax two-thirds as long as broad, base truncate and apex bisinuate, broader at base than apex and broadest at middle, sides evenly though slightly arcuate, margin narrow and concealed from above, surface closely, evenly, cribrately punctured, three basal foveae, one at middle, the other at either side and midway between middle and posterior angles.

Elytra twice as long as wide, as wide at base as the thorax, umbone feebly prominent, sides slightly sinuate in front and gradually narrowed from just beyond middle to apex, margins moderately serrate posteriorly, disc convex, striae deeply impressed, especially near suture and at the sides, and punctured with large approximate punctures, the inner intervals slightly flattened, the outer convex, with single row of fine punctures down the centre from which project short semi-erect setae.

Body beneath rather coarsely, closely punctured anteriorly, more finely and sparsely over abdomen, densely clothed with white recumbent squamulose hairs, the anterior margin of prosternum truncate, the last ventral with a short subapical carina. Length 9.5 mm., width 3 mm.

This elegant and very distinct species likewise belongs with the species having a truncate prosternal margin. It should be

placed next to *A. cribricollis* Horn with which it agrees in general size, form and in regard to the cribrate type of prothoracic punctuation. It, however, differs markedly from this in regard to its coloration, the type of vestiture, and so on, and bears no resemblance whatever to any of our other North American species.

Type and paratype in my collection, collected in the Sabino Canyon, Santa Catalina Mountains, Arizona, July 23, 1917, by Prof. W. M. Wheeler and by him kindly presented to me. Several other specimens are now in Prof. Wheeler's possession. The species is named in honor of its captor.

(To be continued.)

Argynnis apacheana Skinner and Edwards' Plates of A. nokomis (Lep.).

By Albert F. Winn, Montreal, Canada.

It is not without a certain amount of fear and trembling that I venture to make a few remarks on a species of this most perplexing genus of butterflies.

Under the name of *A. nokomis* Edw. we acquired last month for the collection of the Lyman Entomological Room, McGill University, a perfect pair of the species, which has been known under that name until a few months ago when Dr. Hy. Skinner rechristened it as *Argynnis apacheana.*[1]

There seems to be no doubt that he is correct in his contention that the single male specimen that Edwards received in 1862 and described in the Proceedings of the Academy of Natural Sciences,[2] under the name of *A. nokomis,* is identical with what he afterwards described as *A. nitocris*[3] from another single male example, and that, therefore, *A. nitocris* Edw. becomes a synonym of *A. nokomis* Edw.—leaving the species described as *A. nokomis,* with figure showing both sexes and upper and lower surfaces in plate[4]—in need of a name, which Dr. Skinner has now supplied—*apacheana.*

[1] Ent. News, XXIX, 67-68, Feb., 1918.
[2] Proceedings of the Acad. Nat. Sc. of Philadelphia, 1862, p. 221.
[3] Trans. Am. Ent. Soc. V (not XV as quoted in Ent. News), p. 15 (1874).
[4] Edwards, Butterflies of N. A., Vol. I, pl. IV of Argynnis, pp. 73-74; 1873 (not 1868).

There is one statement made by Dr. Skinner which appears to need modification or explanation; namely, that Edwards *did not publish* the plate drawn by D. Wiest, showing the male that he had described in 1862.

In Vol. I, Butterflies of North America, p. 175, (following the author's instructions regarding pencilling in the numbers for plates and text pages), is given a list of "Dates of Issue of Parts 1-10." Part 1 reads as follows: "June, 1868, (on cover April, 1868) containing *Argynnis Diana, A. cybele, A. aphrodite, A. nokomis, A. atlantis.*" That the part was duly sent out is shown by the following quotation from *The Canadian Entomologist* under the heading of "Review of New Entomological Works":[5] "The part contains 5 large 4to plates of these various species of *Argynnis,* viz., *A. diana, cybele, aphrodite nokomis* and *atlantis,* accompanied by descriptive letter press of a valuable character."

In Kirby's Catalogue[6] the reference to *Argynnis nokomis* Edw. reads: "Proc. Ac. Na. Sc., Phila., p. 221 (1862) But. of N. Am. I, iv (1868);" the locality is cited as Montana.

Edwards, Synopsis,[7] species 4, of *Argynnis* reads "*nokomis* ♂ Edw. Proc. Ac. Na. Sc., Phila., 1862, ♂ But. N. A., pl. iv of *Argynnis* (1868)."

It therefore seems quite evident that Part I, with its 5 plates, including that of *nokomis,* male only, drawn by D. Wiest, and accompanying letter-press for each, was duly forwarded to subscribers.

A further reference to "Dates of Issue" shows Supplement, Jan., 1873, "containing new plates of *Argynnis diana, A. nokomis, A. leto.*" So it seems that, after five years elapsed since the plates of *A. diana* and *A. nokomis* were issued, new plates were made and sent out with new letter press likewise, but whether subscribers were requested or instructed to replace the originals by the revised ones or not I have no means of knowing, but there seems no doubt both were issued; in fact, in the

[5] Can. Entom. I. pp. 22-23, Toronto, Oct. 15, 1868.

[6] Synonymical Catalogue of diurnal Lepidoptera, p. 157, 1871.

[7] Synopsis of N. A. Butterflies, p. 12, Phila., 1872, (also in reprint of 1879).

copy of But. N. A., vol. I, before me, it is stated on p. 74, Argynnis iv, line 15, "But the species is so superb that I have not hesitated to redraw the plate."

It would be interesting to those who possess copies of this magnificent work on North American Butterflies, if the American Entomological Society, who published the first volume, and who, as Dr. Skinner tells us, *still possessses the withdrawn plates,* would say how they were withdrawn and whether they succeeded in getting them all back, or whether in some libraries exist copies with the original plates and text—others with the revised ones and perhaps a few with both. It seems not unlikely that at the time the few subscribers to Vol. I thoroughly understood the circumstances, but it certainly detracts from the present value of the work to find that alterations have been made without any notation, to say nothing of the paradox of referring, in an article seemingly published in 1868, to specimens that were not born until 1871. Mr. Edwards himself seems to have forgotten the substitution of a later text and plate for the original, as in his Revised Catalogue,[8] p. 26, he refers to Butterflies of N. A., Vol. I, p. 73, pl. 23, 1868, instead of 1873!

Fortunately this question of dates does not affect the standing of the specific name, for the original description of *A. nokomis* ♂ appeared in 1862. That the type specimen should have disappeared is regrettable.

Dr. Skinner asks for information *re* exact locality and dates, and the pair before us are labelled as having been taken at Rockville, So. Utah, in August. The collector's name is not stated, but the specimens came from the collection of C. E. Worthington, of Chicago, Illinois. In looking at the map of Utah for Kanab, the place referred to by Dr. Skinner as being the shipping point, whence came Mr. Neumoegen's material, it may be seen that Rockville is only a few miles away, both places being close to the Arizona boundary. A single ♀, which has been in my own collection for some 20 years, is labelled "Arizona," and came from Mr. H. Peck and not improbably was received by him from Mr. Neumoegen.

[8] Revised Catalogue of the Diurnal Lepid. of Am. north of Mexico, 1884.

Among the scanty literature on this insect is the following on its capture in Mexico. which may interest some readers of this journal who have not access to a copy of the *Biologia Centrali Americana*.[9]

A. nokomis W. H. Edw.

Pro. Acad. N. S. Phila., 1862, p. 220 ♂.[1]

But. N. A. I Arg. IV tabl (♂ ♀).[2]

Snyder, Occ. Mems., Chicago Ent. Soc. I. 33, 1900.[3]

North America, Rocky Mts.,[1] Bitter Root Mts.,[2] Southern Utah,[3] Arizona.[3]

Mexico, near Durango City (Becker).

"Mr. Becker has sent us a single female specimen of this species from Durango. It differs from Edwards' figures of that sex of *A. nokomis* and from Arizonan females in our collection, having rather more than the basal half of each wing almost uniformly fuscous between the black spots, and on the secondaries beneath the silvery spots from the base to the middle obscure greenish ochreous coloring. The Mexican insect in this respect being almost intermediate betweeen the female of *nokomis* Edw. and *A. leto* Behr."

NOTE BY HENRY SKINNER.

There is not much that I can say about the question raised by Mr. Winn as to the withdrawal and replacement of plates issued in Volume I of Edwards' Butterflies of North America. Mr. E. T. Cresson is the only person alive who had to do with the publication and he does not remember anything about it. It is likely that the figure of *nokomis* by Wiest was intended by Mr. Edwards to be replaced by what he subsequently called *nokomis*, drawn by Miss Mary Peart, as in the preface to the Third Series of the Butterflies of North America he says: "At first there was difficulty in finding an artist who could faithfully portray the butterfly on stone, and two were tried who were far from satisfactory. With Part Two (*Argynnis* VI) came in Miss Mary Peart, who has supported the work to this day." An examination of a number of copies of the work would probably answer the question raised by Mr. Winn. The female specimen mentioned in the Biologia Centrali-Americana I take to be what Dr. W. J. Holland described as *Argynnis caerulescens*.

[9] Biol. Cent. Am. Lepid. Rhap. Vol. II, p. 674, 1901.

Odonata Zygoptera from Guatemala

Collected by Messrs. William Schaus and John T. Barnes.

By PHILIP P. CALVERT, University of Pennsylvania, Philadelphia, Pa.

This paper is essentially a continuation of that published in the NEWS for February and March, 1919, to which reference should be made for general information concerning localities visited by the collectors.

CALOPTERYGINAE.

Hetaerina cruentata (Rambur). Chejel, June, 1917, 1 ♂. San Felipe, February, 1 ♀.

I postpone until a later occasion a consideration of the differences stated by Dr. Ris (Archiv. f. Naturges., 1916, A, 9, 1918) to exist between the females of *cruentata* and *caja*.

Hetaerina tricolor (Burmeister). Cayuga, bananas, October 29, 2 ♀ (1 teneral), November 23, 1 ♂. Quirigua, February 21, 1 teneral ♂; forest, February 22, 1 teneral ♀, March 30, 1 ♀. All these specimens have well-developed pterostigmata.

Hetaerina titia (Drury). Cayuga, April 20, 1 ♂; edge of forest, April 30, 1 ♀; forest, May 3, 1 ♂, May 8, 1 ♀; in banana trail, May 25, 1917, 1 ♀; forest stream, May 29, 1 ♂; forest, June 1, first good rain yesterday, 1 ♀, "entirely black, white spots [= pterostigmata] on tips"; forest, August 14, 1 teneral ♂; August 29, 1 ♂. Quirigua, forest, March 30, 1 ♂. The Cayuga male of August 29 has no pterostigma on any wing; all the other individuals of both sexes have this distinctly developed.

Mr. Williamson (Ent. News, xxiii, pp. 98-101, March, 1912) has come to the conclusion "that in the United States one variable species hitherto known as *Hetaerina titia* and *H. tricolor* exists." His evidence, which I am quite disposed to accept, refers only to the males. If these two nominal species are in reality variants of but one, we should find gradations from the females of *tricolor* to females of *titia*. In a key to the females of *Hetaerina* in the Biologia volume, page 21, I separated *tricolor* from a number of other species as follows:

"*b.* Metallic green on either side of the thoracic dorsum (mesepisternum) divided into two spots, the anterior contiguous to the middorsal carina, the posterior separated from it by buff or brown,

tricolor

bb. Metallic green of each mesepisternum continuous, contiguous to the mid-dorsal carina (or nearly so) throughout its entire length, *titia* and other species

We should, then, find females in which the anterior and posterior metallic green spots of *tricolor* females approach and finally fuse with each other and some in which the posterior spot becomes connected with the mid-dorsal carina. The present Guatemalan material does not furnish any of these intergradations, but two females from the Rio Machuca, Costa Rica, January, 1907, by Prof. P. Biolley, cited on page 345 of the Biologia, afford some of the intermediate conditions sought for.

One of them has the upper end of each posterior (superior) metallic green spot connected by a narrower curved stripe of metallic blue with a black line which runs contiguously to the whole length of the mid-dorsal carina; the distance between the anterior and posterior metallic green spots however is greater than the greatest dimension of the anterior spot.

The other female has the posterior metallic green spot more broadly connected at its upper end with a narrow metallic green stripe which borders the black line that, as in the first female, runs contiguously to the whole length of the mid-dorsal carina; this narrow, bordering metallic green stripe unites with the postero-mesal angle of the anterior metallic green spot. This latter female suggests that a broadening laterad of the "narrow, bordering metallic green stripe" may be the method by which the transition from the thoracic pattern of typical *tricolor* female to that of typical *titia* female is made.

Hetaerina macropus Selys. Cayuga, forest stream, May 31, 1 ♂. Escuintla, February, 1 ♂, July 10, 1 ♀. Mazatenango, in forest, July 19, 1 ♂.

The Escuintla ♂ has no stigma on one front and one hind wing, the ♀ none on the right hind wing; in all three wings a more oblique thickened postnodal (postcubital) cross-vein represents the missing part. The female differs from the characters stated for *macropus* on page 347 of the Biologia volume (under *H. capitalis* ♀) in that the metallic green stripe on the mesepimeron reaches to the upper end of the sclerite. *If* the differentials of the females of *macropus* and of *capitalis* there given be correct, one female (at least) from Cacao, Alta Vera Paz, Guatemala, referred to *macropus* on page 346 of the volume should be corrected to *capitalis*.

Hetaerina capitalis Selys. Cayuga, forest stream, May 31, 1 ♂, "body black, thorax with oblique dark brown streaks; base of

wings crimson, below with lilacine streak"; forest, June 4, 1 ♂. Volcan Santa Maria, 5000 feet, April 19, ♂ ♀ "in cop."

The lengths of the abdomens and hind wings of the three males and one female, respectively, are: 41.5, 29.5; 36.5, 27; 43, 35; 36, 34 mm. All four specimens have pterostigmata.

Cora marina Selys (race **alcyone** Selys?). Cayuga, near stream in bananas, May 28, 1 ♀, "Black with subdorsal dark grey interrupted streak. Ventrally dark grey." Abd. 28, hind wing 26 mm. Front wings: from base to nodus 13.5, from nodus to apex 14 mm.; 29 antenodals, the 11th thicker, 24 (right), 22 (left) postnodals; extreme length of the stigma 3.22, its costal edge 2.38 mm. The nasus is crossed by a median black band .35 mm. in width. The mid-dorsal black band on abdominal segments 2-7 is wider on each segment than on that preceding and on all of them wider than the lateral pale band; in side view of the abdomen the half of this mid-dorsal black band that is visible is from one-sixth (on 2) and one-fourth (on 3), to one and one-half times (on 7), as wide as the pale lateral band. The black mid-dorsal thoracic stripe is at its narrowest place .59 mm. in width, and the black stripes on the humeral and first lateral sutures reach widths of .35 and .21 mm. respectively.

This female is similar to Costa Rican females which I have referred* to *marina* or to forms intermediate between *marina* and *alcyone*, but is still smaller and with more black on all three regions of the body. Dr. Ris, writing of specimens of *marina* from Panama and Bugabita in Panama, says:

"Die Serie entspricht somit den kleinen Massen [der *C. marina*] bei Calvert, und bei Selys den Massen der *C. alcyone* (3. Addit. Synops. Calopt., p. 39, 1873, ♂ Bogota). Diese ist so gut wie sicher keine besondere Art, sondern mit diesen kleinen Exemplaren der *C. marina* identisch." (Archiv f. Naturges., 1916, A, 9, p. 19, 1918.)

LESTINAE.

Lestes tenuatus Rambur. Cayuga, caught on verandah, May 24, 1 ♀. "Thorax dark green with lateral black stripe, pale green below stripe. Abdomen olive brown above; fine whitish segmental lines ant[erior]ly and fine black lines posteriorly on each segment. Abd. whitish brown below."

Not previously recorded from Guatemala, although known both to the north and to the south.

* Calvert, A. S. and P. P., 1917. A Year of Costa Rican Natural History, New York, Macmillan, p. 368.

AGRIONINAE.

Megaloprepus coerulatus (Drury). Cayuga, forest, May 24, 1 ♂, May 28, 1 ♂. Both specimens agree with the characters given for *M. coerulatus coerulatus* by Dr. Ris (Archiv. f. Naturges., 1916, A, 9, p. 68, 1918).

Pseudostigma aberrans Selys. Cayuga, April 19, 1 ♂, April 21, 1 ♂; forest, May 27, 1 ♂. Mazatenango, May, 1 ♀.

In all three males the false pterostigma stops short of reaching the end of the "median vein" (R) by a distance less than its own length, but its length is much less than in the material described in the Biologia volume, page 54, being on front and hind wings for the three males respectively, measured in a straight line from end to end on the wing-margin, 6, 7; 6, 6.5; 7, 7.5 mm. The number of cells in the first "row," i. e. between C and R, is 14-24, and in the second "row," i. e. between R and M1, is 3-7, front and hind wings affording nearly equal variations.

Pseudostigma accedens Selys. Quirigua, February 24, 1 ♀, abd. segs. 8-10 lacking.

The false pterostigma occupies three rows of cells on both front and hind wings; hind wing 60 mm.

Mecistogaster ornatus Rambur. Escuintla, February, 1 ♀.

Mecistogaster modestus Selys. Cayuga, Rio Negro trail, forest, April 30, 1 ♂, 1 ♀; forest, May 3, 1 teneral ♀, June 7, 1 ♀. Quirigua, March 10, 1 ♂; forest, March, 1 teneral ♂. Purulhá, forest, July 7, 1 ♂. Escuintla, forest, March, 1 teneral ♂.

Some remarks on the taxonomy of this species subsequent to the publication of the Biologia volume will be found in Ent. News, xxii, p. 457, December, 1911, and by Dr. Ris, Archiv. f. Naturges., 1916, A, 9, p. 73, 1918.

Heteragrion tricellulare Calvert. Purulhá, July 11, 1 ♂.

Heteragrion alienum Williamson (Occas. Papers, Mus. Zool. Univ. Mich., No. 68, p. 33, 1919). Cayuga, forest river, March 21, 1916, 3 ♂, "all pale markings orange"; forest stream, April 5, 1 ♂; forest, May 3, 1 ♂; forest, June 4, 1 ♂.

Argia pulla Hagen. Cayuga, bananas, October 29, 1 ♂.

Argia oculata Hagen. Cayuga, forest, April 25, 1 ♂, 1 ♀. The ♀ has the labrum black with two small pale spots, no pale mid-dorsal or inferior longitudinal lines or stripes on abdominal segment 5 but the mesostigmal lamina agrees with figure 11, pl. IV of the Biologia.

Argia difficilis Selys. Cayuga, April 19, 1 ♀; Quirigua, forest, March, 1 ♀.

Prof. Foerster has remarked (Archiv. f. Naturges., 80ter Jahrg., 1914, Abt. 2, 2 Heft, p. 66):

In Synopsis des Agrionines hat De Selys ein ♀ als *A. difficilis* beschrieben, von Jurimaguas in Peru. Calvert identifiziert damit eine *Argia* vom *oculata*-Typus von Zentral-Amerika, Kolombia und Ekuador. Ich halte diese aber für die typische *oculata*. Selys beschreibt letztere von Venezuela. Ich besitze Ecuador-Exemplare, welche mit Hagens Abbildung in den Appendices übereinstimmen. Von Madre de Dios in Peru liegt ein Männchen vor, welches ich für typischer halte als Calverts Exemplare.

From his description of this male I quote only the following:

Pterostigma rhomboid, Innenseite und Aussenseite ziemlich gleich, die hintere kaum länger, Vorderseite etwa 6/5 der hintern.

Prof. Foerster says nothing as to whether his Madre de Dios male is conspecific with de Selys' female type of *difficilis*, and until this is positively ascertained one cannot be sure that he has correctly identified his specimen. In favor of his view, indeed, is de Selys' statement: "ptérostigma brun, plus foncé au centre, rhomboïdal aussi long que large, surmontant une cellule," whereas in the specimens which I have regarded as *difficilis* the stigma is longer than wide, as the following measurements show:

"Difficilis" ♀, Cayuga, April 19, fore wing, stigma, anterior side .9, posterior side .9, proximal side .78, distal side .78 mm. These measurements were all made from the *outside* of the enclosing veins; corresponding measurements of the same stigma made *inside* the enclosing veins are .78, .78, .55, .61 mm.

"Difficilis" ♀, Quirigua, March: .86, .9, .77, .65 (.78, .69, .53, .53) mm.
"Difficilis" ♂, Bucay, Ecuador: .86, .86, .57, .61 (.77, .69, .45, .49) mm.
Oculata ♂, Cayuga, April 25: .82, .82, .61, .61 (.69, .65, .49, .49) mm.
Oculata ♀, Cayuga, April 25: .94, .96, .77, .65 (.82, .82, .61, .57) mm.

Dr. Ris (Archiv. f. Naturges., 1916, A, 9, p. 107, 1918) has accepted my interpretation of *difficilis* and makes no reference to the views of Prof. Foerster; it is of interest to note that he quotes 1 ♂, 2 ♀, Oberer Madre de Dios, Peru, as of *A. oculata* (*t. c.*, pp. 105-6).

Argia cuprea Hagen. Cayuga, January, 1918, ♂ ♀ "in cop."; they are of the "form a" of Dr. Ris (Archiv f. Naturges, 1916, A, 9, pp. 110-112, 1918).

Argia extranea Hagen. Purulhá, October, 1 ♀.

Acanthagrion gracile (Rambur). Quirigua, March 1, 1915, 1 ♂. Like other Central American and Mexican examples, this will

probably require another specific name when the penis of the type of *gracile* shall have been examined.

Telebasis digiticollis Calvert. Cayuga, house, October 25, 1 ♀.

Metaleptobasis bovilla Calvert. Cayuga, house, September 2, 1917, 1 ♂.

The single (type) ♂ was imperfect, wherefore the following: rhinarium and labium yellow, antennal joints following the second very slender, blackish. Prothorax orange, unmarked, hind lobe low, convex, apparently entire. The transverse basal pale rings on abdominal segments 2-8. Ultra-nodal sector (M1a) arising at the ninth postnodal on the hind wings (11 postnodals in hind wings), upper sector of triangle (Cu1) ending at level of eighth or ninth postnodal (front wings) or eighth (hind wings).

Mr. Williamson also has described a single male of this species from near Puerto Barrios, Guatemala, taken June 23, 1909. (Proc. U. S. Nat. Mus., Vol. 48, pp. 602, 604, 1915.)

Palaemnema sp. Cayuga, forest, April 25, 1 teneral ♀, abd. segs. 7-10 lacking.

Neoneura aaroni Calvert. Cayuga, house, bath-room, August 28, 1 ♂, of the very young stage (*a*) of the original description (Biologia, p. 139), the hind wing a little longer, (18 mm.).

This species has not been found previously south of Texas. Additional figures have been published by Mr. Williamson (Trans. Amer. Ent. Soc., xliii, p. 241, 1917).

The Flights of Spiders in the Autumn of 1918 (Arach., Aran.).

By J. H. Emerton, Boston, Massachusetts.

The Indian summer of 1918 came on early, and continued in periods of two or three days at short intervals until the last of November. October 9 was one of the first of these days, and at noon eight species of spiders were noticed on garden fences in Cambridge, Massachusetts, some of them making efforts to fly. Favorable weather continuing the next day, I went to my usual autumn hunting ground at Readville, just south of Boston, where a long stretch of wire fences furnish landing places for the spiders flying from several miles of marsh along the Neponset River. Twenty-eight species of spiders were found between the hours of ten and twelve, most of them of

species that might have been swept from the tall grass and low bushes of the neighboring fields at any time during the summer. The only adults were six species of Attidae, but one of them, *Zygoballus terrestris*, a regular autumn flyer. The small Linyphiadae, which are so characteristic of the late autumn flights, were entirely absent. The flying went on several days of the following week, and on October 17 twenty-six species were taken, three of them adult Attidae, and eight adult small Linyphiadae that live in the summer near the ground, among grasses and other low plants. As the season went on the number of Linyphiadae increased and that of the Attidae and Thomisidae diminished, only *Xysticus quadrilineatus* continuing through the season, with *Misumena asperata* abundant the first two weeks. *Tmeticus bostoniensis* and *Diplostyla alboventris* came in on October 17 and, opposite certain fields, continued abundant through the season.

Of the regular fliers the young of all the species of *Pirata* and *Pardosa* increased in numbers until the very last of the season, and at all times there were some individuals of *Epeira prompta, Epeira displicata, Singa variabilis, Anyphoena rubra* and *Dolomedes sexpunctatus*. The largest number of species and of individuals was taken on November 8, when there were adults of twelve species of Linyphiadae and young of two others, with great numbers of young Lycosidae of all kinds.

The best flying weather of the season occurred November 16 between 9.30 and 10.30 A. M., when a hundred spiders of the species listed under that date were taken. At that time there was no wind that could be felt, and several half-grown *Pardosa* were seen to rise vertically from fence posts until out of sight. At 10.30 the wind rose slightly and changed to the east, and the flying stopped. Nothing new in regard to the method of flight was observed this season. Several spiders, while ascending, were seen to draw out a thread attached to the starting point. Several species were seen to drop and hang swinging by a thread, two or three inches long, and in this position to let out flying threads and drift away in the air.

Sixty-nine species in all were observed. Very young *Epeira insularis* and *trifolium* show that these species sometimes de-

velop far enough to leave the cocoon in the fall, instead of waiting until spring. The accompanying table shows the species seen on fences during some of the largest flights and their changes through the season. Only those with the sex marks were adult, but many others were within one molt of maturity, including *Lophocarenum florens, Dictyna volucripes, Linyphia phrygiana, Anyphoena rubra* and *Pardosa glacialis,* all of which mature very early in the spring. The Lycosidae were of all sizes, most of them very small, while other individuals of the same species were nearly ready for the final molt.

	Oct. 10	Oct. 17	Oct. 23	Nov. 7	Nov. 8	Nov. 16
Theridion murarium	—	—	—	—	—	—
Theridion frondeum	. . .	. . .	. . .	. . .	—	. . .
Crustulina guttata	. . .	. . .	. . .	. . .	. . .	—
Enoplognatha marmorata	. . .	. . .	. . .	. . .	—	. . .
Mimetus interfector	. . .	. . .	. . .	—	. . .	. . .
Ceratinella brunnea	. . .	—♂♀	. . .	. . .	—♂	—♂
Ceratinella emertoni	. . .	. . .	. . .	. . .	—♂	—♂
Ceratinella minuta	. . .	—♂	—♀	. . .	. . .	. . .
Cornicularia directa.....	. . .	—♀	. . .	. . .	. . .	. . .
Cornicularia indirecta ...	. . .	—♂	—♂♀	. . .	—♂	—♂♀
Cornicularia communis ..	. . .	. . .	. . .	. . .	—♂	—♂♀
Spiropalpus spiralis	. . .	—♂	. .	—♂	—♂	—♂
Gonatium rubrum	. . .	—♀	. . .	—♀	—♂	. . .
Grammonata ornata	. . .	. . .	—♀	. . .	. . .	. . .
Lophocarenum florens ..	. .	. . .	. . .	—	—	—
Lophocarenum spiniferum	. . .	. . .	. . .	—♂	. . .	—♂
Lophocarenum crenatum	. . .	. . .	. . .	. . .	—♀	. . .
Tmeticus trilobatus	. . .	—♂	. . .	—♂	. . .	. . .
Tmeticus bostoniensis ..	. . .	—♀	—♂♀	—♂♀	—♂♀	—♂♀
Tmeticus plumosus	. . .	. . .	. . .	—♂	. . .	—♂
Erigone dentigera	. . .	—♂	. .	. . .	—♂	—♂
Micronета rectangulata .	. . .	. . .	—♂	. . .	—♂	. . .
Bathyphantes angulata ..	. . .	. . .	. .	. . .	—♂	. . .
Bathyphantes zebra	. . .	. . .	. . .	—♂	. . .	. . .
Diplostyla alboventris ...	. . .	. . .	—♂	—♀	—♂♀	—♂♀
Diplostyla concolor	. . .	. . .	—♀	. . .	. . .	. . .
Linyphia clathrata	. . .	. . .	. .	—	—	—
Linyphia marginata	. . .	. . .	. . .	—	. . .	. . .
Linyphia phrygiana	. . .	. . .	. . .	—	. . .	. . .
Epeira stellata	. . .	—	—	. . .	. . .	. . .
Epeira prompta	—	—	—	—	—	—
Epeira patagiata	—	—	—	. . .	. . .	. . .
Epeira displicata	—	. . .	. . .	—	—	—
Epeira insularis	—	. . .	. . .	. . .	. . .	. .
Epeira trifolium	—	. . .	. . .	. . .	. . .	. .
Singa variabilis	—	—	—	—	—	—
Tetragnatha laboriosa ...	. . .	. . .	. . .	. . .	—	. . .
Dictyna volucripes	. . .	—	. .	—	. . .	. . .

	Oct. 10	Oct. 17	Oct. 23	Nov. 7	Nov. 8	Nov. 16
Lycosa nidicola	—	. . .	. . .	. . .	. . .	. . .
Lycosa lepida	. . .	. . .	—	. . .	. . .	. . .
Pirata minuta	. . .	—	—	—	. . .	. . .
Pirata insularis	—	—	—	—	—	—
Pardosa glacialis	—	—	—	—	—	—
Pardosa nigripalpis	—	—	—	—	—	—
Pardosa diffusa	. .	. . .	. . .	. . .	. .	—
Dolomedes sexpunctatus	—	. . .	. . .	. . .	—	. . .
Pisaura undata	. . .	. . .	. . .	. . .	—	—
Anyphaena rubra	—	—	—	. . .	. . .	—
Anyphaena saltabunda	—	—	. . .	. . .	. . .	. . .
Cheirocanthium viride	—	. . .	. .	. . .	. . .	. .
Prosthesima atra	. . .	. . .	—	. . .	. . .	. . .
Misumena asperata	—	—	. . .	. . .	. . .	. . .
Coriarachne versicolor	. .	. . .	. . .	. . .	—	. . .
Xysticus quadrilineatus	—	—	—	. . .	. . .	—
Xysticus gulosus	. . .	—	. .	. . .	. . .	. . .
Xysticus stomachosus	. . .	. . .	. . .	—	. . .	. .
Tmarus caudatus	—	. . .	. . .	. . .	. . .	. . .
Philodromus pictus	—	. . .	. . .	. . .	—	—
Tibellus oblongus	. . .	. . .	—	—	—	. . .
Phidippus tripunctatus	—	. . .	. .	. . .	. . .	. . .
Phidippus multiformis	—♀	. . .	—♀	. . .	. . .	. . .
Wala mitrata	—	. . .	. .	. . .	. . .	. . .
Zygoballus bettini	—♀	. . .	. .	. . .	. . .	. . .
Zygoballus terrestris	—♂♀	—♂♀	—♂	. . .	. . .	. . .
Epiblemum scenicum	—♂♀	. . .	. . .	. . .	. . .	. . .
Salticus ephippiatus	—	. . .	. . .	. . .	. . .	. . .
Icius hartii	—	. . .	. . .	. . .	. . .	. . .
Dendryphantes aestivalis	—♂♀	—♂♀	. . .	. . .	—	. . .
Dendryphantes militaris	—♂	—♂♀	. .	. . .	. . .	. . .

A Further Note on the Wing-Coupling Apparatus in the Family Micropterygidae. (Lep.).

The short note made by the author on this subject in Ent. News, Vol. xxix, p. 90 (March, 1918), needs correction in an important particular. The study was carried out on the five genera *Micropteryx*, *Sabatinca*, *Mnesarchaea*, *Eriocrania* and *Mnemonica*. Of the first three genera plenty of good material was available, and the results obtained were undoubtedly correct. Of the other two, the author had unfortunately only one or two very poor specimens. Further work on better specimens since received has demonstrated clearly that these two genera, belonging to the subfamily *Eriocraniinae*, though they possess a frenulum as before stated, do *not* have the jugal lobe turned under the forewing; this lobe projects backwards above the costa of the hindwing, as Comstock has recently figured it. Thus there is a very distinct difference between the condition of the jugal lobe in the *Micropteryginae* and *Mnesarchaeinae* on the one hand, and that of the *Eriocraniinae* on the other. Considering also the differences in larval structure, it seems clear that we are really dealing with three distinct families, and that Meyrick's uniting of them all into one can only result in much confusion of ideas.—R. J. TILLYARD, Hornsby, New South Wales, Australia.

A New Skipper from South America (Lepid., Hesperidae).

By A. W. LINDSEY, Decatur, Illinois.

A specimen received from Colombia, South America, in the spring of 1918 has been placed as a new species of Mabille's genus *Haemactis*. Mabille concludes his description with the statement, "Tibias postérieurs nus à une paire d'éperons" (hind tibiae bare, with one pair of spurs), but the specimen at hand bears a short tuft of hair at the distal end of the hind tibiae and a long tuft at their proximal end. Its great similarity to *H. sanguinalis*, type of *Haemactis*, in other respects has led to its being placed with that species, for the secondary sexual characters alone seem insufficient for the establishment of a new genus.

Haemactis pyrrhosphenus n. sp. (Text-fig.).

Upper surface of wings deep brown with the following bright scarlet marks: On the primaries a basal patch and a sub-basal cuneate band extend from the costa almost to the anal vein. These are followed, just before the end of the cell, by a similar pair of cuneate spots extending inward to the middle of the cell. All of these marks are cut by the brown ground color along the veins so that their cuneate shape is only approximate. The four subapical spots so common among the skippers are present, but are outwardly indistinct and merge through a powdery area with the terminal marks. Next to the cell they are ochreous. The outer margin has a rounded-cuneate mark of the same shade of scarlet in each interspace and two between Cu2 and A, which are somewhat longer than the rest. Fringes brown, paler than the ground color. Secondaries similar to primaries but lacking the costal marks. The terminal cuneate marks are about one-quarter as long as the wing and are inwardly more acute than those of the primaries.

Beneath, the primaries are fuscous brown with the inner margin paler and a short, whitish dash along the base of the cubital stem. Only the apical red mark, part of the middle costal patch, and the preapical spots are visible on this surface. The secondaries are fuscous brown between the costa and cell, thence gradually blending into the grayish-luteous inner margin. The veins are marked with the same shade as the costal portion and the outer margin is tinged with scarlet. Fringes of both wings fuscous.

The body is brown above, palpi brown, and head with a few red scales forming a thin transverse line behind the eyes and a small patch of white scales in front of each eye. Underneath the body and legs are concolorous with the wings and the palpi show a few white scales.

Attached to the inner surface of the hind tibia of the male at the proximal end is a slender tuft of long hairs which extends beyond the distal end of the tibia. Here, on the opposite side of the leg, is attached a tuft of shorter hairs which lies along the upper surface of

the metatarsus and does not quite reach its end. (See figure.)

Expanse of type 40 mm.

Type one male from Muzo, Colombia, South America, taken June, 1917, now in the collection of the writer.

Eumerus strigatus Again (Dip., Syrphidae).

By C. L. METCALF, Ohio State University.

In an interesting article by Messrs. Weiss and Nicolay, "*Eumerus strigatus* Fall., the Lunate Onion Fly, in New Jersey" (ENT. NEWS, xxx, p. 27, Jan., 1919), the authors call attention to the capture of an adult in a greenhouse in New Jersey and to its having been reared from roots and bulbs found in New York, Connecticut and Texas (B).*

The authors appear to be of the opinion that the fly is practically unknown in North America, for they say:

"Considering the fact that it was first noted in the United States in 1906 (Chittenden), it is strange that more records of it have not turned up."

A hurried survey of the literature reveals the following records; probably others have been overlooked:

*The letters refer to articles in the bibliography below.

(A) 1910, Dec., JOHNSON, CHARLES W., Some Additions to the Dipteran Fauna of New England, Psyche, xvii, 6, p. 230.

(B) 1912, Jan., FELT, EPHRAIM PORTER, 27th Report of the State Entomologist, N. Y., 1911 (N. Y. State Ed. Dept., Bul. 510, 1912, pp. 119, 120.)

(C) 1915, April, DAVIDSON, W. M., Occurrence of *Eumerus* (Syrphidae) in California, Can. Ent., xlvii, 4, pp. 134-135.

(D) 1916, June, JOHNSON, CHARLES W., Some New England Syrphidae, Psyche, xxiii, 3, p. 80.

(E) 1916, Oct., DAVIDSON, W. M., Economic Syrphidae in California. Jour. Ec. Ent., Vol. 9, No. 5, p. 457.

(F) 1916, Oct., METCALF, C. L., Syrphidae of Maine, Me. Agr. Exper. Sta. Bull. 253, p. 217.

(G) 1917, June, GIBSON, ARTHUR, The Occurrence of *Eumerus strigatus* Fln. in Canada, Can. Ent., xlix, 6, pp. 190, 191.†

Felt (B) says: "There appears to be no published record of the insect having been found in America." W. M. Davidson (C) and Arthur Gibson (G) in articles in the *Canadian Entomologist*, both accredit the first record of the species from America to Felt (B). All of these authors appear to have overlooked the note by Mr. Charles W. Johnson in *Psyche* for December, 1910 (A), which antedates the record by Felt by more than a year, and which is, so far as I am aware, *the first published record* of *Eumerus* in America. The specimens noted by Johnson were taken in 1908 and 1909. Hence, the first *capture* of the species on the American continent may be that by Doctor Fletcher at Ottawa, in 1904, as reported by Gibson (G).

The chronological record for this species in North America, so far as reported, appears therefore to be as follows:

1904, August 19, Ottawa, Canada; adult, Doctor Fletcher. (First capture) (G).

1906, October, reared at Washington, D. C., from bulbs from Buffalo, N. Y., from Connecticut and from Brownsville, Texas; Doctor Chittenden (B).

1908, June 3, Buffalo, N. Y.; adult, M. C. Van Duzee (A).

† Since this article was submitted for publication, there have appeared in the Journal of Economic Entomology (Vol. 12, No. 2, April, 1919, p. 135) two short notes on the occurrence of these flies, by E. R. Sasscer and R. C. Osburn, which further extend the known distribution of *Eumerus strigatus* to Ohio, Philadelphia, Colorado and the State of Washington.

1909, June, Brookline, Mass.; adult, Charles W. Johnson (A).
1910, April, Victoria, B. C.; reared from Narcissus bulbs, E. A. Wallace (G).
1910, October, Victoria, B. C.; larvae abundant in greenhouse, C. G. Hewitt (G).
1910, December, first published record; Johnson, C. W. (A).
1911, August 19, Saratoga Springs, N. Y., reared from Iris roots, E. P. Felt (B).
1914, May to July, Walnut Creek, Berkeley and Oakland, California; ten specimens on the wing, W. M. Davidson (C).
1916, Melrose Highlands, Mass.; adult, R. T. Webber (D).
1916, San Francisco Bay region, Calif.; adults, W. M. Davidson (E).
1916, July 25, Bar Harbor, Mt. Desert Island, Maine; I took a number of adults on the wing in one of the large nurseries. They were flying about among low-growing ornamentals, feeding from the blossoms. The nurserymen had no record of damage by the larvae to their bulbs.
1917, February 5, Montreal, Quebec; adult in greenhouse, J. I. Beaulne (G).

To these records I can add the following:

1916, May 23, Eburne, B. C.; adult, R. S. Sherman.

In 1917 I received through the kindness of Mr. H. F. Dietz, of the Federal Horticultural Board, a number of larvae of this species which had been intercepted in Narcissus bulbs from Holland in November. The larvae pupated in the laboratory from February 12 to March 1, and adults emerged from February 28 to March 14. On this last date some of the specimens were still larvae.

The species is recorded to have two generations a year. Its host plants include onion, Iris, shallot, Narcissus, hyacinth, and Amaryllis. Its reported distribution in America ranges from Maine to California and from Texas to British Columbia, Ottawa and Quebec. I believe that this species, like its companion in habit, *Merodon equestris*, is thoroughly established in widely separated regions of this continent; that many other records of its occurrence at intermediate points will be forthcoming; and that it constitutes a real and totally unappreciated menace to the interests of horticulturists, florists and onion farmers. It will be very surprising if we do not have a sudden and severe outbreak of one or both of these pests, when they have become a little more thoroughly acclimated and have

experienced a period of conditions favorable to their rapid increase in numbers.

I note the following records of the occurrence of the latter species, known as the larger Narcissus- or Daffodil-fly, which are in addition to the records of its interception in shipments of bulbs from abroad.

(H) 1908, Jan., OSBURN, R. C., British Columbia Syrphidae, New Species and Additions to the List, Can. Ent., xl, 1, p. 10. A number of specimens from several localities. Believes it established.

(I) 1911, HEWITT, C. G., Report of the Dominion Entomologist, Canada Expt. Farms Reports, 1911, pp. 207-235, pls. 3, figs. 3. A serious pest in British Columbia; some 50,000 Narcissus and Daffodil bulbs having been destroyed near Victoria during the year.

(J) 1911, NORMAN, P., Merodon equestris in southern British Columbia, Proc. Brit. Columbia Ent. Soc. n. ser. 1911, No. 1, pp. 22-26.

(K) 1914, CHILDS, L., The Large Narcissus-bulb Fly (Merodon equestris), Mo. Bul. Com. Hort. Cal., 3 (1914) No. 2, pp. 73-76, figs 2. Taken frequently in Sutter Co. and San Rafael, Calif.

(L) 1916, June, JOHNSON, CHARLES W., Some New England Syrphidae, Psyche, xxiii, 3, p. 79; Blue Hill, Mass., June 5, 1910, Great Barrington, June 16, 1915.

(M) 1916, Sept., BANKS, NATHAN, et al., District of Columbia Diptera: Syrphidae, Proc. Biol. Soc. Wash., xxix, p. 188; record a specimen labeled Aug. 4, 1907.

(N) 1916, DAVIDSON, W. M., Economic Syrphidae in California, Jour. Ec. Ent., Vol. 9, p. 457.

(O) 1916, Oct., METCALF, C. L., Syrphidae of Maine, Me. Agr. Exper. Sta. Bull. 253, p. 217.

This species was taken in company with *Eumerus* (vide supra) at Bar Harbor, Maine, July 25, 1916. The three specimens taken in the few minutes available for collection represent three of the many diverse color varieties. See in this connection also Johnson (L).

Norman (J) states that it is said to have been introduced to British Columbia about 1905, and that six months are passed in the larval stage, pupation occurring in the soil in February and the adults emerging in late March, and ovipositing in May. Childs (K) says the females oviposit throughout the greater part of the summer. Stocks,* however, states that the life-

cycle is of two years' duration, the larvae being destructive from July of one year to February of the second following year, spending about 19 months in the bulb. Childs (K) lists its host plants as follows: Narcissus, Amaryllis, Vallota, Habranthus, Eurycles, Galtonia, and the bulbs of the wild hyacinth, *Scilla nutoris*.

The control measures for these flies are given as follows by MacDougall† and Childs (K): Examine all bulbs to be planted, destroying all sickly, discolored and infested ones. The infestation can often be detected by pressing between thumb and fingers; if there is a distinct "giving," the bulb is probably infested. Bulbs may be at least partly freed of infestation by submerging for from two to eight days, then thoroughly drying. If an attack is noted in the field, the bulbs should be taken up and burned and the top soil deeply buried in September or early October. (Collinge: Manual of Injurious Insects.)

A new Amastus from Argentina (Lep., Arctiidae).

By W. SCHAUS, U. S. National Museum, Washington, D. C.

Amastus formosana sp. nov.

♂. Antennae brown. Head, collar and thorax dark steel grey; a small yellow spot on tegulae; a fine yellow streak outwardly on patagia. Palpi: first and second joints crimson fringed in front with dark steel grey, the third joint entirely steel grey. Thorax below dull red mottled with yellow brown; legs dark grey partly streaked with crimson at base. Abdomen above crimson, underneath dark grey, expanding laterally towards anal segment, where it meets dorsally.

Fore wings fuscous brown, the costal margin lighter brown the same shade as the antennae; markings light ochreous brown; antemedial elongated spots: one in cell small, one below cell larger with a similar spot above submedian and a narrow streak below submedian; a large spot at end of cell, its anterior edge curved and truncated close to median vein, its outer edge almost straight; postmedial spots large only separated by veins from vein 7 to submedian, below which there is only a minute streak; a series of small subterminal spots, partly lunular, the spot between veins 5 and 6 larger and coalescing with the postmedial spot.

Hind wings semihyaline yellowish white, tinged with roseate at anal angle; a narrow line on discocellular, hairs on inner margin, cilia and tips of veins fuscous brown. Expanse: 61 mm.

Habitat—El Saltadillo, Argentina. *Type* in the United States National Museum.

*Stocks, G., The Daffodil-fly, Merodon Equestris, in The Daffodil Year Book, London, 1914, Roy. Hort. Soc., pp. 50-59, pls. 2.

†Jour. Brd. Agr. (London) 16, (1909) No. 4, pp. 293-297, pls. 2, fig. 1 and ibid., 20, (1913) No. 7, pp. 594-599, figs. 2.

ENTOMOLOGICAL NEWS.

PHILADELPHIA, PA., JUNE, 1919.

A League of Nations Means the Metric System.

A few years ago we published an editorial in the NEWS endorsing efforts made in the House of Representatives to enforce the use of the Centigrade thermometric scale in United States Government publications. The strongest argument for such action was that the Centigrade scale was already in well nigh universal use.

The progressive World Trade Club of San Francisco is urging the United States and Great Britain (the only large nations not using the Meter-Liter-Gram system) to take advantage of the present opportunity in the world's history and legalize the exclusive use of the metric system of weights and measures. The same reason for this change exists as is the case in the matter of thermometry.

As entomologists we have been giving the size of insects in millimeters for many years, and when we go back to some old description and have to translate "lines," or some other antique unit, into modern equivalents, we feel a sinking of the heart. Let us, in these days of a League of Nations, internationalize our standards of measurement as well as our political relations. Let everyone urge his Congressmen to do their utmost to accomplish this result.

Stop Thief!

What is the mental attitude of the thief toward himself? Does the knowledge that he is a thief lower him in his own estimation? It is with sorrow and regret that we admit that there are thieves among entomologists. The individual who will steal from a museum where collections are kept for the benefit of all interested is of the mean kind of person who has no real love for the pursuit and is usually of the collector type who spends his life in sticking specimens over labels and ticking them off in a list and reminds one of many postage stamp collectors. It is almost impossible to give access to a collection and stand over each person every minute to prevent

a mean skunk from pilfering, or to go through the clothes of every person as he finishes studying a collection. Such a course would be offensive to the many visitors to a museum who come for legitimate study and comparison. Many insects are quite small and readily concealed and some weasel may quickly slip into a box the things he covets to fill out the blank spaces in his own collection. We can only repeat with shame that such degraded persons exist among those who are supposed to truly love nature and science for their own sakes. Theft is as far from the thoughts of the true naturalist as murder.—HENRY SKINNER.

Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

The records of papers containing new genera or species occurring north of Mexico are all grouped at the end of each Order of which they treat.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A. London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

4—Canadian Entomologist, London, Canada. **5**—Psyche, Cambridge, Mass. **7**—Annals of the Entomological Society of America, Columbus, Ohio. **8**—The Entomologist's Monthly Magazine, London. **9**—The Entomologist, London. **10**—Proceedings of the Entomological Society of Washington, D. C. **11**—Annals and Magazine of Natural History, London. **12**—Journal of Economic Entomology, Concord, N. H. **17**—Lepidoptera, Boston, Mass. **19**—Bulletin of the Brooklyn Entomological Society. **20**—Bulletin de la Societe Entomologique de France, Paris. **25**—Bulletino della Societa Entomologica Italiana, Firenze. **30**—Tijdschrift voor Entomologie, The Hague, Holland. **31**—Proceedings of the Entomological Society of Nova Scotia, Truro. **50**—Proceedings of the United States National Museum, Washington. **54**—Proceedings of the Biological Society of Washington, D. C. **59**—Journal of Agricultural Research, Washington, D. C. **64**—Parasitology, London. **68**—Science, Lancaster, Pa. **76**—Nature, London. **81**—The Journal of Parasitology, Urbana, Illinois. **82**—The Ohio Journal of Science, Columbus. **85**—The Journal of Experimental Zoology,

Philadelphia. **94**—The American Journal of Science, New Haven, Conn. **95**—Annales des Sciences Naturelles, Paris, Zoologie.

GENERAL. Baumberger, J. P.—Nutritional study of insects, with special reference to microorganisms and their substrata. **85,** xxviii, 1-81. **Bentley (G. M.)**—Benefits to be derived from observing, collecting and studying insects. (Tenn. Sta. Bd. Ent., Bul. No. 20.) **Crampton (G. C.)**—Remarks on the origin and significance of metamorphosis among insects. **19,** xiv, 33-40. **Fenton, C. L.**—Insect migration in Floyd and adjoining counties in Iowa. (American Midl. Nat., vi, 13-15.) **de Meijere, J. C. H.**—Zur evolution der zeichnung bei den holometabolen insekten. **30,** lxi, 57-75. **Onslow, H.**—Colour of the scales of iridescent insects in transmitted light. **76,** ciii, 84. **Riley, W. A.**—A use of galls by the Chippewa Indians. **12,** xii, 217-18. **Van Dyke, E. C.**—Distribution of insects in western N. Am. **7,** xii, 1-12.

MEDICAL. Parman, D. C.—Notes on Phlebotomus species attacking man. **12,** xii, 211-13. **Sweet, E. A.**—The transmission of disease by flies. (U. S. Pub. Health Service, Suppl. 29, Pub. Heal. Rep.)

ARACHNIDA AND MYRIAPODA. Nuttall, G. H. F.—The biology of Pediculus humanus. **64,** xi, 201-20.

Howard, C. W.—Preliminary report on the Trombidiidae of Minnesota. (Rep. Sta. Ent. Minn., xvii, 111-44.)

NEUROPTERA. de la Torre Bueno (J. R.)—Note on neuropteroids. **19,** xiv, 48.

Chapin (E. A.)—New species of N. A. Siphonaptera. **19,** xiv, 49-62.

ORTHOPTERA. Giglio-Tos, E.—Saggio di una nuova classificazione dei Mantidi. **25,** xlix, 50-87. **Morse (A. P.)**—List of the O. of New England. **5,** xxvi, 21-39.

HEMIPTERA. Gibson, E. H.—Hemiptera collected by the Yale Dominican expedition of 1913. **50,** lv, 275-7. Five n. sps. of Jassoidea from Honduras (Homoptera). **54,** xxxii, 25-28. **Morrison, H.**—Report on a collection of Coccidae from Argentina, with descriptions of apparently new sps. **10,** xxi, 63-91. **Oestlund, O. W.**—Contribution to knowledge of the tribes and higher groups of the family Aphididae. (Rep. Sta. Ent. Minnesota, xvii, 46-72.)

LEPIDOPTERA. Allen, E. C.—Key for determining the Crambinae of Nova Scotia. **31,** No. 4, 86-8. **Busck, A.**—On some generic synonymy in the family Gelechiidae. **10,** xxi, 94-6. **Ehrmann (G. A.)**—A new tropical American Papilio. **17,** iii, 30-1. **Herrick & Detwiler**—Notes on the repugnatorial glands of certain Notodontid

caterpillars. **7,** xii, 44-8. **Knetzger (A.)**—A quick relaxing method. **17,** iii, 30. **Mabille & Boullet**—Essai de revision de la famille des Hesperides. **95,** ii, 199-258. **Raymundo, B.**—Noticia sobre alguns lepidopteros serigenos do Brasil. (Rio de Janeiro, 70 pp.) **Rothke (M.)**—Notes on Brephos infans. **17,** iii, 25-7. **Rummel (C.)**—Observations on Physiodes nycteis. Trapping for larvae of Apantesis. **19,** xiv, 47; 62-3. **Swinhoe, C.**—On the geographical distribution of the genus Cosmophila, a noctuid of the family Gonopteridae. **11,** iii, 309-14. **Van Escke (R.)**—Geschichtlich-anatomische untersuchung von den genitalorganen der L. **30,** lxi, 147-231. **Wormsbacher (H.)**—Useful hints to collectors. **17,** iii, 28-9.

DIPTERA. Aldrich, J. M.—The dipterous genus Imitomyia (Himantostoma). **4,** 1919, 64. **Bezzi, M.**—Rinvenimento di una Chionea nei dintorni di Torino [with bibliography]. **25,** xlix, 12-49. **Bishopp & Laake**—The dispersion of flies by flight. **12,** xii, 210-11. **Edwards, F. W.**—Note on the egg-bursting of eucephalous fly-larvae. **11,** iii, 372-76. **Enriques, P.**—Ricerche sulla eredita delle mosche (Rivista di Biologia, Roma, i, 72-81.) **Frost, S. W.**—Two sps. of Pegomyia mining the leaves of dock. **59,** xvi, 229-44. **Keilin (D.)**—On the alimentary canal and its appendages in the larvae of Scatopsidae and Bibionidae.... **8,** 1919, 92-6. Supplementary note on the formation of a cocoon by cyclorhaphous dipterous larvae. **64,** xi, 237-8. **McAtee & Walton**—District of Columbia D.: Tabanidae. **10,** xx, 188-206. **Parker (R. R.)**—Concerning the subspecies of Sarcophaga dux. **19,** xiv, 41-6. **Parker & Wells**—Observations on and experiments with Cuterebra tenebrosa. **81,** v, 100-4.

Malloch (J. R.)—A new Phorid from Illinois. **19,** xiv, 47-8.

COLEOPTERA. Gravely, F. H.—Contribution towards the revision of the Passalidae of the world. (Mem. Indian Mus., vii, No. 1.) **Mosher, E.**—Notes on the immature stages of Deltometopus rufipes. **7,** xii, 49-55. **Wickham, H. F.**—Fossil beetles from Vero, Florida. **94,** xlvii, 355-7.

Fall, H. C.—The Californian species of Malthodes. **7,** xii, 31-43. **Fisher, W. S.**—Descriptions of a new genus and species of Buprestidae from Arizona. **10,** xxi, 91-3. Five new sps. of Ptinid beetles. **50,** lv, 295-9.

HYMENOPTERA. Bradley, J. C.—The status of Parabates Foers., and Parabatus Thoms. (Ichneumonidae). **11,** iii, 319-24. **Burrell & Smith**—Key to the species of Wisconsin ants, with notes on their habits. **82,** xix, 279-92. **Cockerell, T. D. A.**—A new colletid bee from Ecuador. **10,** xx, 206-7. **Cushman & Rohwer**—Genus Ephialtes first proposed by Schrank. **10,** xx, 186-8. **Emery (C.)**—Sur le genre Tranopelta et sur le type du genre Cremasto-

gaster. **20,** 1919, 60-2. **Fraser, H. J.**—Few notes on ant history and habits. **31,** No. 4, 6-9. **Perkins (R. C. L.)**—Note on some genera of Nyssonidae. **9,** 1919, 76-7. **Robertson, C.**—Erroneous generic determination of bees. **68,** xlix, 422-3. **Rohwer & Fagan**—Additions and corrections to "The type species of the genera of the Cynipoidea...." **50,** lv, 237-40. **Washburn, F. L.**—Hymenoptera of Minnesota. (Rep. Sta. Ent. Minn., xvii, 145-237.)

Cockerell, T. D. A.—Some fossil parasitic H. **94,** xlvii, 376-80. **Gahan, A. B.**—New reared parasitic H. with some notes on synonymy. **50,** lv, 113-128. **Kinsey (A. C.)**—Fossil Cynipidae. **5,** xxvi, 44-9. **Wheeler (W. M.)**—A new subspecies of Aphaenogaster treatae. **5,** xxvi, 50.

Doings of Societies.

Entomological Section, Academy of Natural Sciences of Philadelphia.

Meeting of January 23, 1919. Five persons present, Director Philip Laurent presiding.

Mr. Robert Lee Haines, Moorestown, New Jersey, was proposed as a contributor and elected.

Orthoptera.—Mr. Rehn made a few remarks on the species of the Acridid genus *Chlocaltis,* showing, with the aid of a sketch map, the distribution of the three species, one of which is now being described by Mr. Hebard and himself. An interesting feature of the geographic size variation found in the genus was also discussed.

Lepidoptera.—Mr. Laurent exhibited a series of nine males of *Eurymus* (*Colias*) *philodice* Gdt. collected at Mt. Airy, Philadelphia, in which the specimens show considerable variation in the number and size of the spots in the submarginal space of the under side of the wings. No. 1 has seven large markings on each of the fore wings and six on each hind wing, while No. 9 is without markings on the fore wings and only three faint marks on each of the hind ones.—GEO. M. GREENE, *Recorder.*

Feldman Collecting Social.

Meeting of March 19, 1919, at the residence of H. W. Wenzel, 5614 Stewart Street, Philadelphia. Nine members were present, President H. W. Wenzel in the chair.

Diptera.—Mr. Hornig said he had collected some mosquito eggs in South Philadelphia and the first to hatch were *Aëdes sylvestris* Theob. on March 15th; the next larvae to appear were *A. curriei* Coq. on March 17th. Also recorded the finding today of *Wyeomyia smithii* Coq. in pitcher plants at Brown's Mills, New Jersey. The live larvae of *sylvestris* and *smithii* were exhibited, as were the macerated frag-

ments of insects of several orders taken from one pitcher plant. Mr. H. W. Wenzel said he had found along the line of the old Lancaster Pike, Pennsylvania, on January 26th, an old chestnut log and after tearing off the outer bark had found in the fibrous part beneath two clusters of larvae about an inch in diameter, each containing forty or fifty larvae. These were placed in a jar and soon pupated. In the last two weeks many Diptera have emerged and he was surprised to note they are of several species and are as follows: *Tipula* sp.?, *Lonchaea polita* Say, *Pseudotephritis vau* Say, and a new species, *Stoptera digna*, being described by E. T. Cresson, Jr.

Lepidoptera.—Mr. Haimbach recorded two specimens, captured flying, of the "Codling moth," *Carpocapsa pomonella* Linn., on his place at Lower Merion Township, Montgomery County, Pennsylvania, February 16th.

Coleoptera.—Mr. Laurent showed a copy of "A preliminary list of the insects of the Province of Quebec. Part III, Coleoptera," by G. Chagnon, 1917, and stated that of the 1810 species listed somewhat over 1300 are in the New Jersey list.—GEO. M. GREENE, *Secretary*.

OBITUARY

ELIZA KLAGES was born opposite the present courthouse, Grant Street, Pittsburgh, Pennsylvania, January 14, 1835, and died in Crafton, in the same city, March 13, 1919. She was the third of seven children and the only daughter of Jacob and Elizabeth Poth (née Winter) who came from Germany in their early life, were married in Baltimore, and settled in Pittsburgh in 1828. On November 7, 1850, she married G. A. Klages, from which union eight sons and two daughters were born, of whom but half now survive. Of the sons attaining manhood, Charles (the oldest) became devoted to floriculture, and four others became interested in entomology. Frederick, the oldest of these four, did very creditable field work in Jamaica in 1884, and died in 1886 in his 28th year.

Although not listed among the entomologists, Eliza Klages was a lover of nature from her childhood and for many years manifested a lively interest in entomology, which she retained until her last illness. She was particularly informed on the Coleoptera and enjoyed the short collecting trips taken with the writer, whose collection is much the richer because of her interest and devotion.—Her son, EDWARD A. KLAGES.

EXCHANGES.

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

☞ **These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.**

Will pay cash for Pars 39 and 52: Coleopterorum Catalogus, of Junk. Jos. O. Beaulne, 3653 Notre Dame East, Montreal, Canada.

Live Pupae of Sph. chersis, drupiferarum, luscitiosa, eremitus, Phil. achemon, Deid. inscripta, Paon. excaecatus, myops, Eac. imperialis, Cres. juglandis and others for exchange. Wanted—N. A. and Exotic Lepidoptera. Will pay cash for N. A. Catocalas. Herman J. Erb, 925 Hatch Ave., Woodhaven, Lg. Isl., New York.

Wanted for Cash or Exchange—Exotic Lycaenidae and some species from the U. S. Send me your offerta and lowest cash price. Paul N. Musgrave, 130 Oak Street, Clarksburg, W. Va.

Wanted—Syrphidae, Bombylidae and Coccinellidae from all parts of the world in exchange; also Florida insects for those from other regions. P. W. Fattig, Box 315, Gainesville, Fla.

Wanted—Phanaeus, Moneilema and Cleridae for cash or liberal exchange in rarities. Please send your lists to F. J. Psota, 316 So. Mozart St., Chicago.

Diurnal Lepidoptera—I have many desirable western species to exchange. Send lists of offerta. Dr. John Comstock, Southwest Museum, Marmion Way and Ave. 46, Los Angeles, Calif.

Certain Odonata Wanted.—The undersigned desires to examine Gomphus dilatatus and Enallagma pollutum from Florida and nearby States and will much appreciate a loan of such specimens. Please write before sending.—Philip P. Calvert, Zoological Lab'y., University of Pa., Philadelphia, Pa.

Wanted—Species of Dytiscidae, Haliplidae, Gyrinidae and Hydrophilidae, either for exchange or cash. Please send lists. Dr. Geo. W. Bock, 2904 Allen Ave., St. Louis, Mo.

Pentatomidae.—Would like to purchase North American material in this family of Hemiptera. G. Chagnon, P. O. Box 521, Montreal, Canada.

Wanted for Cash—Synopsis of the Erotylidae, by G. R. Crotch, Wm. Beutenmuller, 879 Whitlock Avenue, Bronx, New York, N. Y.

Wanted—Specimens of fleshy and woody fungi from which beetles have been collected, together with names of host trees, names of beetles, localities and dates. All specimens will be gratefully acknowledged and identified, and the information properly accredited. Harry B. Weiss, State Department of Agriculture, Trenton, N. J.

Wanted—Tinulidae from all parts of North America. Material from the far North especially desired. Will buy or exchange. Dr. W. G. Dietz, 21 North Vine Street, Hazleton, Pa.

Aradus.—I am engaged on a review of the North American species of this Hemipterous genus and shall be glad to examine specimens from any part of the continent. Determinations in return for specimens needed in my work.—H. M. PARSHLEY, Smith College, Northampton, Mass.

For Exchange—Live pupae of *E. tityrus* and *H. tenuis*. What have you to offer? Joseph Syrovy, Jr., 4119 W. 21st Place, Chicago, Illinois.

RECENT LITERATURE

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HOMOPTERA.

2113.—**Ferris** (G. F.).—Two species of Phylloxera from California (Ent. News, **30**, 103-105, ill., 1919) ..... .10

LEPIDOPTERA.

2111.—**Hooker** (H. D.).—Notes on the life history of Epipsilia monochromata. (Ent. News, **30**, 61-63, 1 pl., 1919).... .10

2114.—**Coleman** (L. V.).—An aberration of Polygonia progne. (Ent. News, **30**, 112-113, ill., 1919) ..... .10

2112.—**Skinner** (H.).—A new species of Copaeodes. (Ent. News, **30**, 100, 1919) ..... .10

ORTHOPTERA.

786.—**Rehn & Hebard.**—A new species of grasshopper of the genus Chloealtis (Acridinae) from the Pacific slope. (Tr., **45**, 81-87, figs., 1919) ..... .15

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